CIVIL QUALITY CONSULTANTS & ENGINEERS

(Buildings Geo-Tech & Highway Materials Testing Laboratory)
An ISO 9001: 2008 Certified Company

Job No. CQCE/BBMP/KTR/W.No.15/2017-18 13.03.2018

Specific Gravity And Water Absorption Test

IS: 2386 Part III

Client	**Executive Engineer,** Dasarahalli Division, BBMP, Bangalore.
Agency	**Sri. K.T Ramesh,** Contractor, Bangalore.
Name of the Work	Improvements and Re-Asphalting of Road from 5th & 6th Cross Road Kempegowda Nagara & Ramachandra Hospital Road Bhuvaneshwari Nagara in Dasarahalli Ward No.15, BBMP, Bangalore.
Source / Location	Hotmix Plant, Bangalore.
Type of Mix	Dense Graded Bituminous Macadam
Date of Testing	13.03.2018

Sl. No.	Details	Notation	Test Number			Mean Value
			Test 1	Test 2	Test 3	
1	Weight of aggregate suspended in water with the basket	W_1 g	2025	2022	2023	
2	Weight of basket suspended in water	W_2 g	753	753	753	
3	Weight of saturated aggregate in water	$(W_1 - W_2) = W_s$ g	1272	1269	1270	
4	Weight of saturated surface dry aggregate in air	W_3 g	2019	2017	2016	
5	Weight of water equal to the volume of the aggregate	$(W_3 - W_S)$ g	747	748	746	
6	Weight of oven dried aggregate	W_4 g	2010	2009	2006	
7	Specific Gravity	$W_4/(W_3-W_S)$	2.691	2.686	2.689	2.690
8	Apparent Specific gravity	$W_4/(W_4-W_S)$	2.724	2.715	2.726	2.725
9	Water Absorption	$((W_3-W_4)*100)/W_4$	0.45%	0.40%	0.50%	0.47%

Comments:

- Maximum allowable Aggregate Water absorption value for Bituminous Macadam is 2.0%

Note:

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Job No CQCR/BBMP/KTR/W.No.15/2017-18

14.03.2018

BITUMEN CONTENT AND GRADATION DETERMINATION OF Dense Graded BITUMINOUS MACADAM MIX AASHTO T 164 & AASHTO T 30

CLIENT	**Executive Engineer,** Dasarahalli Division, BBMP, Bangalore.
AGENCY	**Sri. K.T Ramesh,** Contractor, Bangalore.
NAME OF THE WORK	Improvements and Re-Asphalting of Road from 5th & 6th Cross Road Kempegowda Nagara & Ramachandra Hospital Road Bhuvaneshwari Nagara in Dasarahalli Ward No.15, BBMP, Bangalore.
SAMPLE I/D	Sample Supplied by Agency
DATE OF TESTING	14.03.2018

BITUMEN CONTENT DETERMINATION

Description	Trail 1	Trail 2
1 Weight of Mixture before Test, g	500	500
2 Weight of Mixture after Test, g	482.5	483
3 Weight of Asphalt and Mineral matter Extracted, g	-	-
4 Weight of Mineral Matter, g.	-	-
5 Weight of Ash, g		
6 Weight of Bitumen Extracted, g. (corrected)	17.5	17.00
7 Bitumen content in %	3.50	3.40
8 Average	3.45	

GRADATION AFTER EXTRACTION

SIEVE SIZE	Trail 1				JOBMIX
mm	Weight Retained, gm	% Retained	%Cummulative Retained	% Passing	Gradation
26.5	0	0	0	100	100
19	36.84	7.64	7.64	92.36	90-100
13.2	155.7	32.27	39.90	60.10	56-88
4.75	169.2	35.07	74.97	25.03	16-36
2.36	52.41	10.86	85.83	14.17	4-19
0.3	48.71	10.10	95.93	4.07	2-10
0.075	9.6	1.99	97.92	2.08	0-8

SIEVE SIZE	Trail 2				JOBMIX
mm	Weight Retained, gm	% Retained	%Cummulative Retained	% Passing	Gradation
26.5	0	0	0	100	100
19	29.74	5.95	5.95	94.05	90-100
13.2	146.23	29.25	35.19	64.81	56-88
4.75	182.7	36.54	71.73	28.27	16-36
2.36	83.16	16.63	88.37	11.63	4-19
0.3	23.74	4.75	93.11	6.89	2-10
0.075	8.9	1.78	94.89	5.11	0-8

Note:

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Ref No.: CQCE/BBMP/KTR/W.No.15/2017-18 Date:16.03.2018

TEST REPORT

CLIENT	:	**Executive Engineer,** Dasarahalli Division, BBMP, Bangalore.
AGENCY	:	**Sri. K.T Ramesh,** Contractor, Bangalore.
NAME OF WORK	:	Improvements and Re-Asphalting of Road from 5th & 6th Cross Road Kempegowda Nagara & Ramachandra Hospital Road Bhuvaneshwari Nagara in Dasarahalli Ward No.15, BBMP, Bangalore.
TYPE OF MIX	:	Bituminous Concrete
PERIOD OF TESTING	:	16.03.2018

The results of the tests conducted on the Bitumen sample for Bituminous Concrete

Sl.No	Description	Test Method as per IS	Test Result	Requirement as per IS: 73-2013
1	Penetration at 25^{0}C, 100g, 5 Sec 1/10 mm	IS: 1203-1978 (RA-2009)	67	60 to 70
2	Softening point, ^{0}C	IS: 1205-1978 (RA-2009)	50	Min. 45
3	Ductility at 27^{0}C, cm	IS: 1208-1978 (RA-2009)	100 >	Min. 50
4	Flash Point, ^{0}C	IS: 1209-1978 (RA-2009)	296	Min. 220

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CQCE/BBMP/KTR/W.No.15/2017-18

Aggregate Gradation Test

IS : 2386 Part I

16.03.2018

	Executive Engineer, Dasarahalli Division, BBMP, Bangalore.
	Sri. K.T Ramesh, Contractor, Bangalore.
Name of the Work	Improvements and Re-Asphalting of Road from 5th & 6th Cross Road Kempegowda Nagara & Ramachandra Hospital Road Bhuvaneshwari Nagara in Dasarahalli Ward No.15, BBMP, Bangalore.
Type of Mix	Bituminous Concrete
Date of Testing	16.03.2018

Total Weight of Sample: **5000** gm

SIEVE SIZE, mm	Weight Retained, gm	% Retained	Cummulative % Retained	% Passing	JOBMIX Gradation as per MORTH	Remarks
19	0	0	0	100	100	Gradation satisfies Bituminous concrete Grade-II specification as per MORTH
13.2	531	10.62	10.62	89.38	79 - 100	
9.5	542	10.84	21.46	78.54	70 - 88	
4.75	613	12.26	33.72	66.28	53 - 71	
2.36	599	11.98	45.70	54.30	42 - 58	
1.18	652	13.04	58.74	41.26	34 - 48	
0.600	268	5.36	64.10	35.90	26 - 38	
0.300	412	8.24	72.34	27.66	18 - 28	
0.150	591	11.82	84.16	15.84	12 - 20	
0.075	321	6.42	90.58	9.42	4 - 10	

Total Weight of Sample: **5000** gm

SIEVE SIZE, mm	Weight Retained, gm	% Retained	Cummulative % Retained	% Passing	JOBMIX Gradation as per MORTH	Remarks
19	0	0	0	100	100	Gradation satisfies Bituminous concrete Grade-II specification as per MORTH
13.2	483	9.66	9.66	90.34	79 - 100	
9.5	526	10.52	20.18	79.82	70 - 88	
4.75	638	12.76	32.94	67.06	53 - 71	
2.36	562	11.24	44.18	55.82	42 - 58	
1.18	632	12.64	56.82	43.18	34 - 48	
0.600	481	9.62	66.44	33.56	26 - 38	
0.300	422	8.44	74.88	25.12	18 - 28	
0.150	562	11.24	86.12	13.88	12 - 20	
0.075	438	8.76	94.88	5.12	4 - 10	
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Authorised Signatory

Laboratory : # 133, Bhuvaneshwarinagar, Dodda Basti Main Road, Bangalore - 560 056.
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16.03.2018

Specific Gravity And Water Absorption Test
IS: 2386 Part III

Name of the Work	**Executive Engineer,** Dasarahalli Division, BBMP, Bangalore.
	Sri. K.T Ramesh, Contractor, Bangalore.
	Improvements and Re-Asphalting of Road from 5th & 6th Cross Road Kempegowda Nagara & Ramachandra Hospital Road Bhuvaneshwari Nagara in Dasarahalli Ward No.15, BBMP, Bangalore.
Type of Mix	Bituminous Concrete
Date of Testing	16.03.2018

Sl.No.	Details	Notation	Test Number			Mean Value
			Test 1	Test 2	Test 3	
1	Weight of aggregate suspended in water with the basket	W_1 g	2023	2025	2022	
2	Weight of basket suspended in water	W_2 g	753	753	753	
3	Weight of saturated aggregate in water	$(W_1 - W_2) = W_s$ g	1270	1272	1269	
4	Weight of saturated surface dry aggregate in air	W_3 g	2019	2021	2018	
5	Weight of water equal to the volume of the aggregate	$(W_3 - W_S)$ g	749	749	749	
6	Weight of oven dried aggregate	W_4 g	2008	2013	2010	
7	Specific Gravity	$W_4/(W_3-W_S)$	2.681	2.688	2.684	2.684
8	Apparent Specific gravity	$W_4/(W_4-W_S)$	2.721	2.717	2.713	2.717
9	Water Absorption	$((W_3-W_4)*100)/W_4$	0.55%	0.40%	0.40%	0.45%

Comments:

Maximum allowable Aggregate Water absorption value for Bituminous Concrete is 2.0%

Note

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Job No.: CQCE/BBMP/KTR/W.No.15/2017-18 16.03.2018

BITUMEN CONTENT AND GRADATION DETERMINATION OF BITUMINOUS CONCRETE

CLIENT	**Executive Engineer,** Dasarahalli Division, BBMP, Bangalore.
AGENCY	**Sri. K.T Ramesh,** Contractor, Bangalore.
NAME OF THE WORK	Improvements and Re-Asphalting of Road from 5th & 6th Cross Road Kempegowda Nagara & Ramachandra Hospital Road Bhuvaneshwari Nagara in Dasarahalli Ward No.15, BBMP, Bangalore.
DATE OF TESTING	16.03.2018

BITUMEN CONTENT DETERMINATION

Description	Sample 1	Sample 2
1. Weight of Mixture before Test, g	500	500
2. Weight of Mixture after Test, g	470	469
3. Weight of Asphalt and Mineral matter Extracted, g	30	31
4. Weight of Mineral Matter, g.	-	-
5. Weight of Ash, g	-	-
6. Weight of Bitumen Extracted, g. (corrected)	30	31
7. Bitumen content in %	6.00	6.20
8. Average	6.10	

GRADATION AFTER EXTRACTION

TABLE - 1

SIEVE SIZE	Percent Passing, %		JOBMIX
mm	Sample 1	Sample 2	Gradation
19	100.00	100.00	100
13.2	93.24	90.85	79-100
9.5	78.61	77.35	70-88
4.75	56.82	59.52	53-71
2.36	45.16	47.62	42-58
1.18	38.21	39.55	34-48
0.6	30.12	33.61	26-38
0.3	29.62	25.84	18-28
0.15	18.34	17.65	12-20
0.075	8.25	6.35	4-10

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